

Ensuring America's Competitiveness – Encouraging Innovation and the Development of Nanotechnology

The talent, intellect, and entrepreneurial spirit of the American people have made this nation the leader in economic and technological advancements. American leadership is fueled by national investments in an educated and skilled workforce, groundbreaking federal research and development by the public and private sectors, and a steadfast commitment to being the most competitive and innovative nation in the world.

Unfortunately, America's global leadership in technological advancement and innovation is being seriously challenged by other countries. To address the state of America's global competitiveness in science and technology, I worked with my colleagues on the Democratic Leader's task force to develop the [Democrats Innovation Agenda - A Commitment to Competitiveness To Keep America #1](#). Working with leaders from the high-technology, venture capital, academic, biotech and telecommunications sectors, we identified and committed to the following priorities that will guarantee our national security and prosperity, expand markets for American products, and assert economic leadership throughout the world:

- Create an educated, skilled workforce in the vital areas of science, math, engineering, and information technology;
- Invest in a sustained federal research and development initiative that promotes public-private partnerships;
- Guarantee affordable access to broadband technology for all Americans;
- Achieve energy independence in 10 years by developing emerging technologies for clean and sustainable alternatives that will strengthen national security and protect the environment; and,
- Provide small businesses with the tools to encourage entrepreneurial innovation and job creation.

In 2007, Congress passed and the President signed into law the [America COMPETES Act](#) which incorporated many important elements of the Innovation Agenda, recommendations included in the National Academies' report

Rising Above the Gathering Storm

, as well as provisions from my own INVENT Act (see below) in order to strengthen our national economic competitiveness through investments in science, technology, engineering, and math (STEM) education, by setting our science research agencies on a path to doubled funding, and by addressing our need for innovation in energy research.

As a member of the Commerce, Justice, Science and Related Agencies and Labor, Health and Human Services, Education, and Related Agencies Appropriations Subcommittees, I am proud to have delivered on the funding needed to implement the America COMPETES Act in the years since its enactment and I plan to continue to do so.

With Congress looking to reauthorize America COMPETES, I am working with my committee colleagues and as a member of the [Competitiveness Task Force](#) to move forward policies to promote competitiveness through innovation and to restore long-term U.S. economic growth and job creation.

INVENT Act

I believe that one of the most important things we can do to remain competitive in the global marketplace is to truly understand what makes America the world's leader in innovation and to teach our students the skills used by the most creative and innovative among us. To achieve this, I introduced the [Innovations for our Nation's Vital Educational Needs for Technology \(INVENT\) Act](#). The INVENT Act sought to:

- Establish a competitive program within the National Science Foundation to develop, and make available for the use at the elementary, secondary, and undergraduate levels, curriculum tools that will help foster inventiveness and innovation;
- Implement a public awareness and outreach campaign relating to invention and innovation that would include public events such as competitions, displays, and traveling exhibitions as well as establishing awards and prizes honoring inventors to stimulate invention and innovation in areas of greatest need and raise the stature of inventors and innovators in the eyes of young people; and
- Establish within NSF engineering and social science research programs on the process of invention and the teaching of inventiveness which are aimed at gaining a deeper understanding of the creative mind and creative environment, the measurement of inventiveness, diffusion of teaching of inventive creativity, and rapid learning as part of the crossing of boundaries of convention, expectation, and disciplines that is at the heart of invention.

I was pleased when provisions of the INVENT Act were included in the America COMPETES Act, which became law in 2007.

Nanotechnology

While serving as a member of the [Science Committee](#) I enacted [legislation](#) to encourage the development of nanotechnology in the United States. The emerging fields of nanoscience and nanoengineering (collectively, “nanotechnology”), which allow the control of materials at the atomic level, are leading to unprecedented scientific and technological opportunities that will benefit society by changing the way many items are designed and made, in areas such as electronics, medicine, energy, biotechnology, and information technology. According to various estimates, including those of the [National Science Foundation](#), the market for nanotechnology products and services in the United States alone could reach over \$1 trillion later this century.

Following enactment of this important bill, I convened the Blue Ribbon Task Force on Nanotechnology with State Controller Steve Westly. Throughout 2005 this distinguished group, whose diverse membership drew from academia, government, established industry, startup companies, consulting groups, non-profits, and industry associations throughout California, debated ideas and developed a series of policy recommendations that are included in the report [Thinking Big About Thinking Small](#).



Many of these recommendations are reflected in a bill I introduced, the [Nanotechnology Advancement and New Opportunities \(NANO\) Act](#), H.R. 820, designed to respond to the ways in which the field has evolved over the past few years. Science and Technology Committee Chairman Bart Gordon introduced similar legislation, H.R. 554, the [National Nanotechnology Initiative Amendments Act](#).

Both H.R. 554 and H.R. 820 would focus America's nanotechnology research and development programs on areas of national need such as energy, health care, and the environment, and

have provisions to help assist in the commercialization of nanotechnology. The bills also address the uncertainty that is one of the major obstacles to the commercialization of nanotechnology – uncertainty about what the health and safety risks might be and uncertainty about how the federal government might regulate nanotechnology in the future – by requiring the development of a nanotechnology research plan that will ensure the development and responsible stewardship of nanotechnology.

Other important areas that are addressed by both bills include:

- the development of curriculum tools to help improve nanotechnology education;
- the establishment of educational partnerships to help prepare students to pursue postsecondary education in nanotechnology;
- support for the development of environmentally beneficial nanotechnology; and
- the development of advanced tools for simulation and characterization to enable rapid prediction, characterization and monitoring for nanoscale manufacturing.

I am also pleased that H.R. 554 requires that the National Nanotechnology Initiative Advisory Panel be a stand-alone advisory committee. This is a concept I originally proposed in 2002 in the [Nanoscience and Nanotechnology Advisory Board Act](#) (H.R. 5669 in the 107 th Congress).

On February 11, 2009, the United States House of Representatives unanimously passed H.R. 554, and we are now awaiting Senate action on the bill.

It is critical that we ensure that the development of nanotechnology is done responsibly. You can read my speech at the April 28th, 2006 " [NanoWorld: Toward a Policy for the Human Future](#) " Conference to hear my thoughts on the promise of nanotechnology and the need to consider ethical questions as we move forward.